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ABSTRACT

To assess teacher interaction (specifically in regard to the use of questions) with special needs and nonspecial needs preschoolers, 16 special needs and 16 control Ss (3 to 5 years old) were identified. Each of the target Ss was videotaped for two different 15-minute segments in free play and at randomly selected times. Videotapes were analyzed for adult-child interactions and for each question asked by the adult of the child. On the whole, teachers behaved in a very similar manner with both special needs and nonspecial needs Ss. However, nonspecial needs Ss initiated 32 interactions with the adults while special needs Ss initiated only 14. Teachers asked significantly more questions of special needs Ss than nonspecial needs Ss. Evaluation questions were the most frequently asked of both groups. Findings support previous work suggesting the need for helping teachers formulate more divergent questions to develop students' problem solving skills. Results also indicated the importance of training teachers to interact more verbally with nonverbal children. (CL)

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Adult Interaction and Questioning of Special Needs Children in an Integrated Programme

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Mainstreaming is becoming a familiar practice in many educational programmes. The success of the approach has been studied from several perspectives. While teacher attitudes have been identified as a critical variable in the success of mainstreaming (Klein, 1975), most research on what actually happens in a programme centres on the social interaction between the special needs and nonspecial needs children (Guralnick, 1979). The few studies that do look at teacher involvement focus on teachers' overall opinion of mainstreamed classes (Childs, 1981; Johnson, 1981) and teacher attempts to improve interactions between special needs children and their peers (Fredericks et al, 1978; Guralnick, 1978). Teacher interaction with mainstreamed children was part of a larger study of social interaction by Ipsa and Matz (1978) and Ipsa (1981).

Of the many aspects of teacher-child interaction, question asking is a common occurrence. Snow (1977) found that over 30% of adult child discourse consisted of questioning and if that adult happened to be a teacher the amount of questioning would increase. Questioning has been viewed as a major technique in helping children learn (Dillon, 1982). The use of questions to elicit talking from language-delayed children has been discussed by Hubbell (1977) and Honig and Wittmer (1982) felt that selective use of questions would lead to higher cognitive and social development in toddlers.

As teachers are key players in the success of an integrated programme looking at how they interact with the children will assist in understanding how to facilitate the integration process. In particular, understanding the nature of teacher interaction in mainstreamed programmes will help in the development of inservice and preservice training programmes aimed at developing professionals in the area.

REVIEW OF RESEARCH

Mainstreaming can very broadly be defined as the placement of handicapped students in the educational setting which meets their unique needs and which exposes them to the placement experienced by nonhandicapped students (Ruhl, 1983). According to Gearheart and Weishahn (1980), mainstreaming has, in one form or another, been evident for over 150 years. Recent increased interest and legislation have meant a rapidly growing concern with the immediate consequences and the longterm impact of mainstreaming.

Adult Interactions

Studies looking specifically at teacher interaction with special needs and nonspecial needs children are limited. Much of the research to date has centred on teachers as one aspect of a larger study.

On the whole researchers have found that special needs children receive more prompts and reinforcements from their teachers than their nonspecial needs peers (Guralnick, 1981). Ipsa (1981) found that teachers refused to accept the requests of handicapped children and corrected their behavior more often than that of their nonhandicapped peers. Handicapped children, however, received more affection and help from teachers while nonhandicapped children spent more time observing teachers.

Bruck and Ruckenstein (1981) found that the speech of kindergarten teachers to language-delayed children was more redundent and more tied to the immediate context than the teachers' speech to "normal" children of the same age. These teachers tried to elicit speech from the language-delayed children more often than they

attempted this with the nonlanguage-delayed children. Also, more active attempts were made to involve the language-delayed child than the nonlanguage-delayed child in activities.

Novak et al (1980) found that handicapped children received more teacher direction than nonhandicapped children. Higher frequency of conversation with special needs children was found in a study by White (1980). Also, a higher proportion of children with special needs spent more time alone with the teacher.

Adult Use of Questions

Consistently, adult speech to young children includes shorter utterances, simpler syntax (Snow, 1977), slower rate of speech (Broeen, 1982), higher average pitch (Garnica, 1977) and a higher proportion of questions (Savic, 1975; Snow, 1972 & 1977).

McShane's study (1980) reported that 26% of adult utterances to children were questions. Snow (1972) stated the percentage to be closer to 35% while Savic (1975) maintained that over 50% of utterances to three year olds were questions. These high percentages seem plausable since questions are regarded as a key technique in helping children learn (Dillon, 1982; Gall, 1970; Riegle, 1976; Rosenshine, 1976). Also, the purpose of an adult questioning a child is rarely to seek information the adult does not have. Rather, it is to direct the child's attention to some topic of the adult's concern (Dillon, 1982; Honig and Wittmer, 1982).

Question classification systems have taken several different routes. Many attempts have focussed on the response elicited by the question rather than the form of the question itself. Holzman (1972) developed five categories of adult-child questions; requests for information, requests for behavior, questions requesting repetition,

interrogatives phrased as questions, and questions to display child's knowledge. This classification system was an attempt to demonstrate that adults ask the kinds of questions they do in order to obtain a desired behavior from the child.

Honig and Wittmer (1982) maintain that the use of certain types of questions can result in increased problem solving in children and promote cognitive and social development. Questions about the child's feelings of self, about the physical nature of objects, and questions which elicit awareness of feelings of others formed these kinds of facilitative questions. They suggest that caregivers may need specific training in order to use these kinds of questions effectively.

Teacher questioning was one aspect of the study by Wood, McMahon, and Cranstoun (1980) on teacher-child interaction in preschool settings. They classified five types of questions in decreasing order of frequency. These included questions which ask for information, description, intention, evaluation, and explanation. They found that high incidences of questions corresponded to low incidences of child verbalization.

Question-Response-Confirmation

Berninger and Garvey (1981) felt the unique properties of questions were found in how they interact with the prior and subsequent utterances in the conversation. Mishler (1978) suggested that the basic unit for analysis must include a question, a response and then confirmation by the questioner. Discourse can be initiated and sustained through these three components of questioning and can be easily maintained when the confirmation of the response is another

question. This chaining is used frequently in teacher talking with children and maintains teacher control in the interaction (Mishler, 1975).

Blank (1973) used a similar three component system in developing one to one sessions with low functioning preschoolers. She stressed the importance of the teacher's response to the child's response and felt this was key in enhancing problem solving skills in low functioning children. For example, if the child's response to the teacher's question was incorrect, the teacher would need to further respond with a simplification technique that would help the child respond correctly. Problem solving skills were not enhanced when the teacher responded simply by providing the correct answer. Similarly, if the child's response was correct, the teacher's response needed to include praise and elaboration based on the child's response. She found this helped develop problem solving skills to a much greater extent than by responding with praise alone.

METHOD

The purpose of the present study was to assess the teacher interaction with special needs and nonspecial needs prechoolers. Within this context the use of questions by the teacher was given specific attention as this had been found to be a major occurance in teacher-child interaction (Brophy and Hancock, in press; Dillon, 1982; Honig and Wittmer, 1982). The training of teachers to work in integrated programmes has been stressed and an understanding of what actually happens between teachers and children in integrated programmes will assist in the development of preservice and inservice programmes aimed at training professionals to work in an integrated

environment.

Subjects and Setting

Sixteen children from 3 to 5 years were observed over the course of a 12 week period in two preschool programmes. The children had been in the programmes for a previous 12 weeks before a break period so all were familiar with the routine of the programmes. Eight of the children - 4 special needs and 4 nonspecial needs - attended a morning programme and the other 8 children - 4 special needs and 4 nonspecial needs - attended an afternoon programme. Both programmes used the same facilities and all children attended for 2 1/2 hours per day, 4 days a week. There were 25 children enrolled in each programme.

The children identified as having special needs were referred by social and medical agencies in the community. The nature of their special needs were language delay, Down's Syndrome, behavioral and social/emotional difficulties and developmental delay due to premature birth. The special needs children ranged in age from 3 years to 5 years 8 months. There were 2 girls and 6 boys in the special needs group.

Sixteen children matched by the head teachers were used as a comparison group. These children came from the same community and attended the programmes on the same days and for the same length of time as their special needs peers. This nonspecial needs group ranged in age from 3 years 1 month to 4 years 10 months. There were 4 girls and 4 boys in this group as there were no other boys of the same developmental level as the special needs group.

Each preschool programme was staffed by a head teacher, an assistant head teacher and student teachers. There were 11 students

in the morning programme and 8 in the afternoon programme with not all students attending on the same day. On any one day the adult-child ratio in the programmes was 1:4. These students were in their senior years of an undergraduate degree programme and were receiving practicum training in the preschool. The research centered on the interactions of this group with the children.

Data Collection

Each of the target children was video-taped for two different 15-minute segments over the course of the 12 week programme. Videos were taken during the free play period at randomly selected times. The person taking the video-tapes did not know the nature of the study, nor which children were special needs and nonspecial needs. Also, as video taping was a common feature of the programmes, and was used for feedback to students, it did not intrude into programme functioning.

The data for this study were analysed in two stages. The first stage looked at the adult-child interactions and used a five second time sampling procedure. The following categories derived from the work of Ipsa (1981) and Brophy and Hancock (in press) were used to assess the interaction. The behavior noted at the end of the 5 second interval was recorded. Interrator reliability was recorded to a criterion of 92% among 3 observers. One person then analyzed all video tapes with no knowledge of the special needs or nonspecial needs children.

Adult Behavior

Positive contact - praises or encourages the child, e.g. "Good", or interacts with the child in a very positive tone.

Negative contact - criticizes, scolds, forbids or reprimands.

Labels/describes - classifies or identifies an object or person.

Requests/commands - asks or tells the child to do something, or simply asks a question.

Repeats - repeats what has been previously said.

Expands/corrects - expands or corrects the child's speech.

Explanation - explains, offers reasons and accounts for phenomena.

Conversation - engages in a conversation with the child where both speak twice.

Observes - watches child for at least four consecutive seconds.

Ignores - disregards or does not pay attention to the child (no eye contact).

Positive physical contact - communicates a positive message through physical contact, e.g. hugs, kisses, etc.

Negative physical contact - communicates a negative message through physical contact, e.g. child is physically restrained.

Gestures - motions using the limbs or body to express a thought or to make an emphasis.

Analysis was then done on each question asked by the adult to the child. The sequence observed was adult question, child response, and adult confirmation. Question classification was derived from the work of Holtzman (1972) and Wood, Cranstoun, and McMahon (1980).

Question Types

Asks for Information - teacher asks for information about events not in the area. The teacher generally does not know the answer.

Asks for Description - teacher asks the child to name or comment upon events or objects in the immediate context. The teacher knows the answer unless the context is fantasy.

Asks about Intention - teacher asks what the child would like to do next, offering a genuine choice.

Asks for Evaluation - teacher asks child to make a forced choice or yes/no decision.

Asks for Explanation - teacher asks the child to go beyond the appearance of an event to talk about cause.

Asks for Repetition - teacher asks the child to repeat her or himself.

Asks for Behavior - teacher requests a behavior in the form of a

question.

Children's Responses

1. Repeats teacher's question
2. Yes or no
3. One word answer, other than yes or no
4. Up to and including one sentence
5. More than one sentence
6. Asks another question
7. Non-verbal but vocal
8. Gesture

Teacher Confirmation

1. Repeats child's response
2. Comments - brief response to child
3. Elaborates - expands on child's response by offering an explanation and/or related information
4. Question - teacher asks another question
5. Gesture - responds with facial expression or body movement
6. No confirmation

Interrater reliability was obtained by 3 people independently observing the video tapes of three children for 15 minutes each to a criterion of 96% agreement. One observer then analyzed all the video tapes with no knowledge of the special needs and nonspecial needs children. Pooled variances were calculated and student-t tests were performed on the normative ratio for the data.

RESULTS

On the whole it was found that the student teachers behaved in a very similar manner with both the special needs and the nonspecial needs children. These student teachers initiated 58 interactions with special needs and 42 interactions with nonspecial needs children. Bruck and Ruckenstein (1981) and White (1980) had found that teachers did initiate more interactions with special needs children. The main difference, however, was found in child initiated interactions. Nonspecial needs children initiated 32 interactions with the adults while the children with special needs initiated 14 interactions.

The adults behaved in a similar manner with both groups of children. For all children the most frequently occurring interaction was the adult giving a request or command to the child, this was followed by labelling or describing an object, event or person and also praising or encouraging the children. Nonspecial needs children received slightly more explanations than their special needs peers. In particular the teachers expanded or corrected what special needs children said. The use of gestures did not differ for the two groups of children.

**** Table 1****

What was most striking was the similarity in the interactions between teachers and the two groups of children. Contrary to White (1980) the special needs children did not receive more teacher attention. One surprise was the little amount of conversation that occurred between teachers and children. In a programme with approximately a 1:4 ratio of adults to children more time was available for chit-chat - but this was not done. Rather teachers were

TABLE 1 Teacher Interaction with Special Needs and Nonspecial Needs Children

Behavior	Special Needs		Non-Special Needs	
	Amount	Percent	Amount	Percent
Positive contact (Praise/encourage)	59	13%	51	12%
Negative contact (criticize/repremand)	0	0%	4	1%
Label/describes	62	14%	48	12%
Request/commands	186	42%	162	39%
Repeats	19	4%	26	6%
Expands/corrects	14	3%	1	.24%
Explanation	43	10%	54	13%
Conversation	3	.6%	2	.49%
Observes	10	2%	19	5%
Ignores	0	0	1	.24%
Positive Physical Contact	14	3%	14	3%
Negative Physical Contact	2	.45%	1	.24%
Gestures	35	8%	29	7%

more involved in directing the children and in orchestrating the environment.

While on the surface the teacher-child interactions appear similar for both groups of children, a closer look at the special needs group reveals some significant differences. Four of the 8 special needs children were not highly verbal; they were silent children using language infrequently. Of this group one was language-delayed, one was physically abused, one child was developmentally delayed due to premature birth, and one child had Down's Syndrome.

****Table 2****

Teachers initiated more of their interactions with the verbal special needs children but not significantly more. The amount of teacher-child interactions recorded, however, was significantly different with 263 teacher-child interactions recorded for teachers with verbal children and 184 teacher interactions with nonverbal children. In addition, the teachers gave 111 requests/commands to the verbal children with only 75 directed to the nonverbal group. Teachers also provided more explanation to the verbal children while using gestures more frequently with the nonverbal groups. The teachers in effect provided more verbal input to the verbal special needs children and also opened up the possibility for the children to respond verbally. Teachers repeated more for the verbal children, they explained, labelled, described, and just did more talking and giving verbal feedback. The key to determining teacher interaction seemed to be the verbalness of the children and not the specific nature of the special needs.

TABLE 2 Teacher Interaction with Verbal and Nonverbal Special Needs Children

Behavior	Verbal Special Needs		Nonverbal Special Needs	
	Amount	Percent	Amount	Percent
Positive contact	31	12%	28	15%
Negative contact	0	0	0	0
Label/describes	36	14%	26	14%
Request/commands	111	42%	75	41%
Repeats	12	5%	7	4%
Expands/corrects	9	3%	5	3%
Explanation	30	11%	13	7%
Conversation	3	1%	0	0
Observes	5	2%	5	3%
Ignores	0	0	0	0
Positive Physical Contact	8	3%	6	3%
Negative Physical Contact	2	1%	0	0
Gestures	16	6%	19	10%

Teacher Questions

Teachers asked many questions to all children. In particular special needs children were asked significantly more questions than their nonspecial needs peers.

Evaluation questions were the most frequently asked of both groups of children. A teacher is almost always assured of a response if the child had only to reply with a yes or no. While this may be a good way to get information from a child, Honig and Wittmer (1982) have suggested that this is not the best way to help children learn due to the close-ended nature of the questions.

****Table 3****

Of the questions that the children answered, there was very little difference between the 2 groups in the nature of the children's responses (Table 3). Most children responded with a yes/no. Part of this may very well be due to this high proportion of evaluation questions asked of both groups. Because the kinds of responses to evaluation questions are limited to yes, no, or a forced choice. the nature of the responses will be very similar between both groups. Special needs children, who got asked more questions for description than the nonspecial needs children, may have had more of an opportunity to give fuller answers, but they did not respond or did not respond verbally to most description questions asked of them. The reason for this can, in part, be accounted for by the fact that four of the special needs children have been identified as nonverbal.

TABLE 3 Teacher Questioning to Special Needs and Nonspecial Needs Children

	Special Needs		Nonspecial Needs		
	Mean	s.d.	Mean	s.d.	
Teacher Questions					
Number of questions	34.8	29.0	16.4	6.6	$p < .025$
Types					
Evaluation	15.6	4.2	16.3	4.6	n.s.
Description	5.7	2.4	4.4	3.0	$p < .025$
Intention	3.0	4.2	2.4	2.7	n.s.
Behavior	1.9	2.4	1.3	1.3	$p < .050$
Child Responses					
No response	7.7	3.7	3.6	2.2	$p < .025$
No opportunity	3.7	2.2	3.1	1.8	n.s.
Gesture	8.3	4.9	9.4	6.6	n.s.
Yes/No	2.7	3.5	5.8	4.1	$p < .025$
Teacher Confirmation					
Comments	8.0	3.4	11.9	5.9	$p < .025$
Questions	9.1	4.9	9.5	2.4	n.s.
Elaborations	2.6	3.3	3.9	2.4	$p < .025$
Gestures	2.6	1.4	.65	.82	$p < .025$
No opportunity	3.7	2.1	3.9	3.4	n.s.
Time to confirm if no child response	1.6	1.0	1.0	1.0	$p < .025$

The teachers demonstrated that they were aware of the difficulties that special needs children may have when responding (Table 3). They gave special needs children a longer opportunity to respond, and when any of the children did not respond, the teachers, frequently reworded or rephrased their question. Here, for example, are a few teacher questions which occurred:

Teacher - Now where did the money go?

Allan - No response

Teacher - Where's all the money gone?

Allan - No response

Teacher - Is the money in there? (points)

Allan - Yes

Since special needs children more frequently did not respond, this may also have contributed to teachers asking special needs children generally more questions. Nonspecial needs children were provided with more comments and elaborations. In effect the student teachers were trying to engage in a reciprocol interaction with these children.

Again a difference was noted in the interactions of student teachers with those special needs children who used language. The verbal children received many more questions than the nonverbal children (Table 4). Of the question types, evaluation questions were again asked most frequently of both groups. Questions for description were asked more often to the nonverbal children and questions for intention were slightly higher for the verbal children. The teachers may again have been trying to encourage conversational interaction with nonverbal chidren. They gambled on obvious questions for which

they and the children knew the answers. However, as stated by Wood, McMahon, and Cranstoun (1980), children seem reluctant to answer questions for which they know the adult knows the answer. Descriptive questions are an example. In effect these adults could be asking the exact questions which would discourage a response from children in general, let alone a nonverbal child.

****Table 4****

Nonverbal special needs children tended to not respond to teacher questions while verbal children gave a yes/no answer. The pattern for continuous questioning can be seen with the teacher following up on the nonresponse of the nonverbal child by asking more questions. As suggested by Wood, McMahon and Cranstoun (1980) by asking more questions the adult may effectively be creating a barrier to their own objectives - increase verbalness. Honig (1981) maintained that language-delayed children need chances to ask questions instead of being on the receiving end of questions. In particular these nonverbal children need a chance to take control of their interactions with adults. The constant questions by the adults keeps control in their own hands. For the verbal children teachers followed their responses with comments and elaborations in addition to questions.

DISCUSSION

Overall the environment of the preschool was a highly verbal one in terms of adult-child interaction and the verbal interaction was highly controlled by adults asking questions. In particular, whether the special needs child used language or not is a major factor in the nature of the teacher-child interactions that resulted. In general teachers responded to special needs children by asking questions and

TABLE 4 Teacher Questioning to Verbal and Nonverbal Special Needs Children

	Nonverbal		Verbal		
	Mean	s.d.	Mean	s.d.	
Teacher Questions					
Number of questions	29	8.2	42	42.8	n.s.
Types					
Evaluation	21.5	6.3	21.9	10.8	n.s.
Description	11.1	4.7	5.9	1.1	$p < .025$
Intention	2.2	.52	6.4	8.3	$p < .10$
Behavior	2.7	4.0	2.2	1.5	n.s.
Child Responses					
No response	12.6	5.6	8.8	4.4	$p < .10$
No opportunity	6.1	2.1	4.3	3.9	n.s.
Gesture	10.6	8.4	12.5	5.8	n.s.
Yes/No	3.0	5.5	9.5	5.8	$p < .025$
Teacher Confirmation					
Comments	11.6	5.5	13.4	4.5	n.s.
Questions	15.4	5.1	9.7	7.7	$p < .05$
Elaborations	2.9	1.5	4.7	6.5	n.s.
Repetition	.56	.68	0	0	n.s.
Gestures	2	.5	1.9	2.6	n.s.
Time to confirm if no child response	2.1	.9	1.6	1.0	n.s.

giving them requests/commands. Hubbel (1977) found that parents of language-delayed children relied primarily on questions and commands to elicit talking from their children. This would appear to be similar to the results of this study. While the teachers interacted less frequently with the nonverbal children, the main areas of contact were around questions and commands. Questions in this study seemed to be used as a means to elicit speech from children. In particular, the children who did not talk had questions asked repeatedly to them. The adults were trying to get a verbal response using repeated questioning. The question-no response-question sequence for nonverbal special needs children was an indication of this.

Teachers try to elicit speech from language-delayed children (Bruck and Ruckenstein, 1981) and the adults in this study appeared to be doing this. Too much questioning can, however, do the reverse of what the adult intends. Over-questioning can result in the withdrawal of the child from interacting with the adult. Wood, McMahon and Cranstoun (1980) suggest that a high incidence of questions corresponds with a low incidence of child verbalization. For special needs children, and nonverbal special needs children in particular, this is the exact opposite of what is intended. They maintain that by asking more questions the adults may be creating barriers for achieving their objectives. The more the adults controls the situation, the less of a chance for the child to talk freely. This is also evidenced in the negligent amount of conversation that occurred for all children.

The volume of evaluation questions or descriptive questions for which the adult knew the answers was high. Honig and Wittmer (1982)

have felt that questions about the child - feelings about self, the physical nature of objects, feelings of others - would promote cognitive and social development in toddlers. These types of questions did not occur frequently in this study. Broeen (1975) has suggested that with yes/no questions the major cognitive burden of the verbal interaction falls on the speaker. Therefore, the type of questions directed at children in this study required little from them. Yes/no type questions or questions for description are the easiest for adults to ask. In particular, for student teachers who are anxious about their interaction with children such questions are almost assured of getting a response. In addition, the student teacher can maintain control of the interaction by asking another question - again of a similar nature. Mishler (1975, 1978) believes that through the act of questioning, one speaker defines the way in which the other is to continue in the conversation. Successive questioning by adult initiation allows the adult to maintain control over the continuation of the interaction.

From a child's perspective - particularly a special needs child - they experience an environment highly directed by the adults. They tell them what to do or ask them to do things, they label and describe what they are doing and in particular they ask questions and continue to ask questions. Nonspecial needs children had similar interactions except after they answered a question they were more likely to get a comment or elaboration as a response. This allows them more opportunity to be equal partners in the conversation.

This study would support the work of Honig and Wittmer (1982) that suggests teachers should be trained to formulate more divergent questions, particularly if we want to develop problem-solving

abilities in children. In fact to change it around students do not know how not to ask questions. In follow-up analysis of these and many more tapes the issue of questions repeats itself, whether the children are 15, 25, or 35 months of age. Teachers need to be taught not only to ask more divergent questions but also how not to ask questions - how to carry on a conversation with children, while tying shoes, or putting more paper on an easel. Students should be taught how to comment on what they or the children are doing. Teachers are trained to facilitate children's learning, and they evaluate whether children have learned by asking questions. Student teachers, in particular, have a strong orientation to helping children develop cognitively. Conversation does not fit with the view they have of what teachers do with children. The use of questions is not at isssue but rather the proportion of questions relative to other activities is too high.

This study has indicated that student teachers may interact differently with special needs children based on their verbal skills rather than on the specific nature of their special needs. In particular, a focus for student training should be on helping them interact more verbally with nonverbal children. Student teachers are nervous, they need to feel in control of the children. Being uncertain of their skills may make them even more oriented to control. In particular their nervousness may be accentuated with special needs children who are hard to predict and with nonverbal children it may be worse for they do not respond at all. Silence is a terrible thing for student teachers. Therefore, they ask questions. However, while the teacher may feel comfortable the child is rendered more silent by

persistent questions and may choose to not respond as indicated in this study. This is not what is wanted from special needs and nonverbal special needs children in particular.

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